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A SWOT Analysis of Organic Dried Fig Production in Iran

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Abstract

The aim of this study is to examine the current situation of Iranian organic fig growing and exportation. SWOT analysis was applied to the production, processing, storage, exports and structure of market competition and distribution aspects. The data were gathered using two methods, consisting of firstly of documentary studies and secondly a survey study. The research instrument used was a questionnaire. The results have been presented in a SWOT frame, and the results from this research are divided into four categories as follows. (1) strengths - such as the supply of an effective organic figs, the supply of a small size product, lowest raining climate and product with low moisture content; (2) weaknesses - such as lack of research and development of high-yielding varieties and domestication, lack of cooled and controlled atmosphere storages facilities in region, the absence of a national logo and standards for organic products, lack of fig processing facilities, lack of well equipped and specialized laboratories, lack of appropriate processing, storage and packaging system, and having no integrated, systemic approach in organic fruits growing; (3) opportunities - such as dry farming, lower cost of production, the geostrategic conditions of Iran (the fastest growing market of organic consumption in the world, region and Iran's reputation as a dried fruits exporter); and (4) threats - such as drought and climate change, fluctuation of fig price, irrigation of orchards, bulk selling, merging low quality and un-organic figs from other regions, limited research and development centres in this case, lack of developmental, extension and advisory services.

Keywords: Dried fig, Organic, SWOT analysis, Iran

ارزیابی تولید انجیر ارگانیک در منطقه استهبان با استفاده از تحلیل SWOT

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چکیده

تولید محصولات ارگانیک در جهان جایگاه ویژه‌ای یافته است و بازار این محصولات روز به روز در حال افزایش است. کشور ایران با دارا بودن تجربه دیرینه در امر کشاورزی و نیز شرایط مستعد برای کشت ارگانیک، می‌تواند به یکی از کشورهای مهم آسیا در تولید محصولات ارگانیک تبدیل شود. اما در حال حاضر در این زمینه توفیقی به دست نیاورده است. انجام مطالعات هدفمند در جهت شناخت فرصت‌ها و تحلیل در جهت امکان تولید ارگانیک برای بازارهای داخلی و صادرات بسیار مهم و ضروری است. به این منظور مقاله حاضر با استفاده از روش پیمایش و تعیین نقاط قوت، ضعف، فرصت‌ها و تهدیدها (SWOT) به ارائه راه‌کارها و استراتژی در جهت تولید و توسعه انجیر ارگانیک در منطقه استهبان استان فارس پرداخته است.

کلیدواژه‌ها: انجیر، تولید ارگانیک، تحلیل SWOT

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Introduction

Organic farming is a farming system that uses environmentally friendly methods of weed, pest and disease control, prohibits the use of synthetic pesticides and fertilizers, emphasizes animal welfare in animal breeding, takes care of the overall harmony of agrienergy and encourages recycling of raw materials. Organic farming has been applied for several dozen years as a worldwide strategy that has enjoyed extensive public support and that strives to achieve sustainable development and protection of the environment on the earth. (Willer and Yussefi, 2007)

In developing countries, certified organic agricultural production is limited. However, a significant share of agricultural land is under traditional or alternative production methods. Such areas could be converted to certified agriculture relatively easily, provided that certification costs can be kept low. Iranian traditional agriculture resembles organic agriculture in many ways and, for example, some products from mountainous regions are completely organic. There are several reasons to argue that there is a good capacity in Iranian field crop cultivation for making the transition to organic agriculture (Mahmoudi *et al.*, 2007). Fig production in Estahban is a good example for examining this question.

The fig (*Ficus carica*, Moraceae) probably originated in Western Asia, and spread to the Mediterranean (Tous and Ferguson, 1996). Fig fruits are a very nourishing food and are also used in industrial products (Guesmi *et al.*, 2006). A comparison of the mineral element contents of figs with that of other fruits indicates that figs have a higher calcium content than apples, dates, grapes, and strawberries and contain more potassium than apples and dates (Vinson, 1999). Figs have a great importance in nutrition due to being important sources of carbohydrates. They contain essential amino acids and are rich in vitamins A, B1, B2 and C and minerals. The fruit is usually consumed fresh locally or in dried, canned, and preserved forms. Several countries import

dried figs or fig paste with the main exporters of dried figs and paste being Turkey and the USA (Sadhu, 1990). The fig is a fairly important world crop, with an estimated annual production of 1,077,211 tons of fruit (FAO, 2003). Iran is the third largest producer and exporter of figs, having produced more than 87,520 tones in 2005 and exported 1,610 tones to various countries in 2005 (FAO, 2007). Most of the figs in Iran are produced in the Estahban region of Fars Province (Figure 1). The capital of Estahban County, Estahban has been one of the most famous providers of fig to the world; it is also one of the biggest producers of saffron. This region has a 90% share of dried fig production in Iran which is dried on the tree (Figure 2B). Figs are spread over either the ground or on a platform (Eshfang) in a thin layer directly exposed to the sunlight for less moisture content (Figure 2C).

The Argentine organic horticultural sector has been analyzed using SWOT-analysis (FAO, 2001). Results identified the sector's strengths and successes, but also list its limiting factors. Its strengths were thanks to its climate, natural soil fertility and other physical conditions combined with a low pest pressure, meaning that organic production is feasible throughout virtually all the whole country, without major difficulties or strong adjustments to conventional production methods. Access to credit, limited availability of bio-pesticides, a youthful and inexperienced organic sector, and the extensive coverage of conventional agriculture are assessed as weaknesses, along with constraints in commercialization of the product and lack of contracts with the importers abroad.

Organic exports, currently the destination of 85 percent of domestic organic production, are poised to continue to be the strongest growing sector. Thanks to the natural conditions of Argentina, its equitable legislation, its competent control mechanisms and its good air and sea links, the generally high quality requirements for imports into developed country markets are met without any major problems being

identified. One obvious factor is competition from other countries with similar advantages (such as climate and opposite seasons), such as Chile, Brazil, and South Africa. On-going improvements in storage methods of perishable products allow for competing producers of organic fruits and vegetables in the northern Hemisphere (e.g. Spain and Italy) to widen the availability of organic products throughout the year. This may strongly affect export opportunities from Argentina (and other southern Hemisphere exporters). Distrust among groups of organic consumers in importing countries about the reliability of certification mechanisms abroad is another factor which might limit export possibilities from countries overseas. (Ferguson, 2004)

A similar study was conducted for Chilean organic horticulture (FAO, 2001). The opposite growing season compared with that of the northern consumer markets, the variety of climates in its long North-South territory combined with the gift of naturally fertile soil and clean water from the Andes Mountains have been strengths; being a relatively young sector with no special financial arrangements for farmers are its weaknesses. Competition from producers with similar comparative advantages (e.g. a supply of fresh off-season products) for the northern markets and generally higher than conventional production costs, due to lower yields and costs for certification and control constitute threats to it.

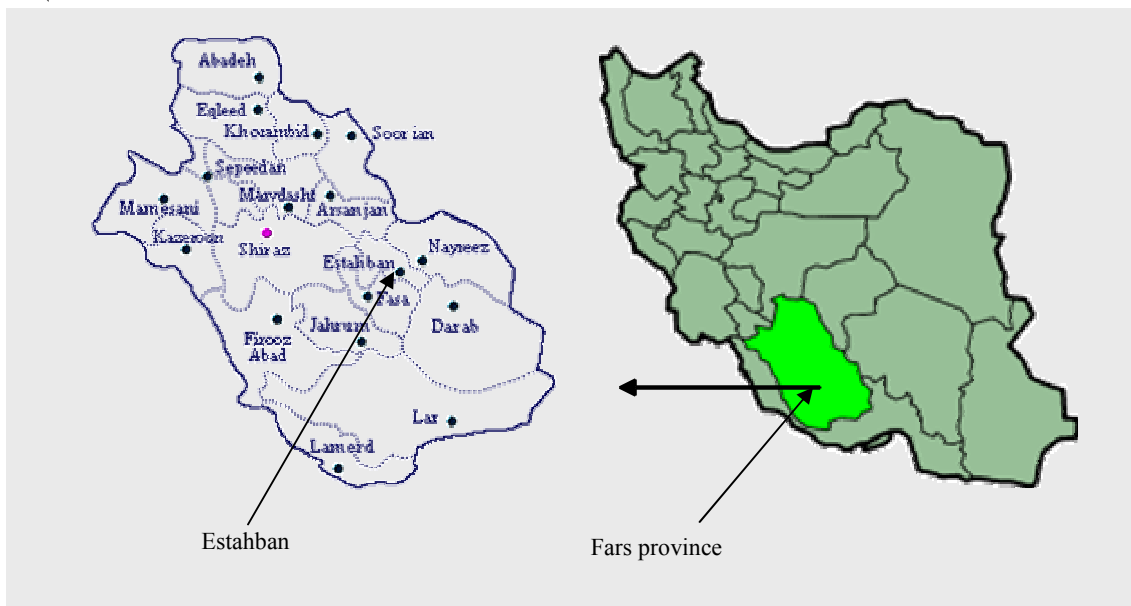


Figure 1. Geographic position of the sampling region.



Figure 2. (A) Fig farms, (B) dried figs on the tree and (C) an *Eshfang* (sun drying place).

The purpose of this paper is to analyse the strengths, weaknesses, opportunities and threats (SWOT) of organic dried fig production in Iran.

Materials and Methods

Basic concepts

SWOT analysis has its origins in the 1960s (Learned *et al.*, 1965) and is an analytical and strategic planning tool often used in a participatory planning approach. Originally, the method was developed for strategic planning for marketing purposes. SWOT is only a tool in a planning process and has to be based on a sound knowledge of the current situation and trends. The outputs of a SWOT analysis are structured basic information, a common understanding of reality and a set of common strategic options.

The two main components of SWOT are:

- Indicators of the *internal situation* described by existing strengths and weaknesses:
 - A *strength* is defined as any internal asset in terms of know-how, technology, motivation and entrepreneurial spirit, finance, business links etc. This can help to exploit opportunities and to fight off threats,
 - A *weakness* is an internal condition or any internal deficit which endangers the competitive position of a region or hampers the exploitation of opportunities,
- Indicators of the *external environment* described by existing threats and unexplored opportunities.
 - An *opportunity* is any external circumstance or characteristic which favors the demand of the region or where the region is enjoying a competitive advantage,
 - A *threat* is a challenge of an unfavourable trend or of any external circumstance which will unfavourably influence the position of the region.

The analysis of the SWs and OTs results in a provisional goal formulation, a provisional development strategy and a priority ranking of actions to be undertaken in the short, medium and long terms to attain the development goal (Dyson, 2004).

SWOT analysis of external opportunities and threats as well as the internal strengths and weaknesses of the enterprises is important for strategy formulation and development. The purpose of the analysis of external opportunities and threats is to evaluate whether an enterprise can seize opportunities and avoid threats when facing an uncontrollable external environment, such as fluctuating prices, political destabilization, social transition and change in the rule of law. The purpose of the analysis of internal strengths and weaknesses is to evaluate how an enterprise carries out its internal work, such as management, work efficiency, research and development. If used correctly, SWOT can provide a good basis for successful strategy formulation (Chang *et al.*, 2006). A review of past documents on SWOT analysis reveals that most presented a literal description of the analysis and few conducted quantified analysis. As planning processes are often complicated by numerous criteria and interdependencies, it may be that utilization of SWOT is insufficient.

Study design

A cross-sectional observational study was conducted on fig farming in the Estahban region. Observations were conducted at four separate geographical areas, namely the northern, central, western and eastern areas of this region.

Data collection process

The data were gathered from two methods that consists of: (1) documentary studies - study of documents, yearbooks, papers and other available references; and (2) a survey study - interviews with farmers, exporters, processors, technologies, academics, specialists, experts, governmental authorities and professional Iranian fig growers. The research instrument was a questionnaire that has been designed with open questions. 150 persons from the aforementioned categories were interviewed. The results have been presented in a SWOT frame and

their frequencies and percentage were used to form a SWOT worksheet.

Results and Discussion

Because of the aim of this paper, the results of this research were presented as a SWOT framework, which is able to establish systemic and integrated thinking among readers. Therefore, the results of this survey research (interview with 150 persons related to fig growing in Iran) were provided on a SWOT worksheet as follows:

Strengths

- **Produce size** - Iranian dried figs are of a small size and attractive to consumers.
- **Costs of production** - costs of production are lower than those of other fig producers because of low horticultural costs.
- **Demand** - the demand for organic and healthy fruits is expanding rapidly both in Iran and its exporting markets.
- **Supply** - Iranian dried figs have the ability to supply large quantities of organic figs for Iran and many markets overseas (e.g. EU and Persian Gulf).
- **Climate** - Thanks to its climate (very low rainfall), natural soil fertility and other physical conditions combined with a low pest pressure, organic production is feasible virtually throughout the region, without any major difficulties or strong adjustments to conventional production methods.
- **Low moisture content of produce** - the average rainfall is 350 mm during the fig growing in this region. The low moisture content results in low aflatoxin production risks.

Weaknesses

There exist a series of weaknesses, which limit the farmers' ability to take full advantage of the above-mentioned strengths.

- **Education** - most farmers engaged in fig production are illiterate and so introducing new methods to

control pests in an organic way decreases yield and the profit. There is a lack of farmer and consumer education by the authorities about the benefits of consuming organic fruits and the beneficial effects that organic growing has on the environment. Lack of public awareness (consumers) as to what is organic farming is obvious.

- **Financial** - access to credit, especially for small farmers, is virtually impossible with actual rates limiting investment possibilities. No direct support to organic exports is provided by the Iranian Government. However, indirect support exists through non-oil products.
- **Pest control** - many producers complain about the limited availability of bio-pesticides.
- **Post-harvest storage** - the lack of cooled and controlled atmosphere storage facilities in the region is the main farmers' complain.
- **Transportation**- quotation of gas in Iran, high transportation costs and distance from ports are very important factors in the high costs of organic fig production and exportation.
- **Market information and research** - there is no information about organic price, marketing information and global organic market research. There is no state-wide market or marketing infrastructures for medicinal plants in Iran. Therefore organizations and infrastructures should be formed to support in this sector.
- **Lack of fig processing facilities and well equipped and specialized laboratories.**
- **Inactive NGOs** - there is only one NGO that is not exclusively active in facilitating the production and furthering the development of the organic farming.
- **Lack of appropriate processing, storage and packaging system** - the major part of enterprises responsible for packing, processing and storage of the products (mostly exports) are those which are conventional processors and who have no academic education or expectations.

- **No integrated and systemic approach to organic fruits growing-** very few governmental and private agencies are paying attention to the production of organic products.
- **Limited research and development centres in this case in Iran** - in research and development, more attention should be given to R&D in the organic production sector.

Opportunities

- **Dry farming** - fig production by dry farming plays an important role in organic farming. In this farming, the use of chemical fertilizers is forbidden (because tree roots are going to surface).
- **Providing employment** - an appropriate processing technology results in a higher rate of employment in this region.
- **Geostrategic opportunities** - the fastest growing market for organic consumption and Iran's reputation and fame as a dried fruits exporter, combined with good sea and air links, have underpinned the development of its organic export sector.
- **Establishment of co-operation between farmers** - there are opportunities for farmers to co-ordinate fig production in order to reduce production costs and establishment of processing and storage facilities.
- **Contracting** - forward contracts by government to ensure farmers their produce will be bought.

Threats

- **Drought and climate change.**
- **Insurance** - unfulfilled promises of damage compensation (low and late payment) from insurance companies.
- **Fluctuations in the fig price** – lack of consistency in fig growing by farmers could be the result of fluctuations in the fig price.
- **National Standards and organization** - the absence of a national logo and standards for organic products limits marketing opportunities in the

overseas market level. Lack of certification standards, appropriate legislation and regulations at national or regional levels all represent weaknesses of this industry in Iran.

- **Traditional harvesting and post-harvest practices** – there is a shortage of trained personnel and equipment in hygienic harvesting and post harvesting practices.
- **Irrigation of orchards** - in order to ensure more stable yields, fig farmers need to irrigate their orchards.
- **Bulk selling** - fig exports in bulk packages (over 10 kg). Due to the lack of fig packaging facilities, additional profits for the fig growing industry in Iran are reduced.
- **Originality** – the original quality of organic figs produced in Estahban can be sabotaged by mixing low quality and non-organic figs from other regions with Estahban figs.
- **No integrated or systemic approach planning exportation to goal markets.** There is no information on the organized market, marketing and access to the latest technological and market information.
- **No coordination between the Ministries of Agriculture, Industry and Commerce for developing industries relative in fig exporting.**
- **Very few government agencies are paying attention to the production of this valuable produce.** There is no integrated and systemic approach to planning for organic farming.
- **There is lack of developmental, extension and advisory services in fig marketing.**
- **Independency policy for agriculture in Iran.** Access to high yield production of agricultural products in any way threatens organic farming.

Conclusion and Recommendations

The case study on the successes and weaknesses of the Iranian organic fig sector shows the importance of its national legislation on organic production as well as

Table 1- SWOT-Matrix of Iranian Organic Fig.

Internal Factors	External Factors
<p>Strengths</p> <ol style="list-style-type: none"> 1. Suitable size and desirable for consumer. 2. Low cost of production. 3. Increasing demand for organic and healthy fruits. 4. Ability to supply large quantities 5. Appropriate climate. 6. Low moisture content of produce 	<p>Opportunities</p> <ol style="list-style-type: none"> 1. Dry farming 2. Prepare of employment 3. Geostrategic opportunities 4. Establishment of co-operation between farmers. 5. forward contracts by government
<p>Weaknesses</p> <ol style="list-style-type: none"> 1. Lack of awareness of benefits of organic agriculture 2. Limitation of access to credit 3. Limited availability of bio-pesticides. 4. Lack of cooled and controlled atmosphere storages. 5. High transportation costs 6. Lack of marketing information. 7. Lack of fig processing facilities 8. Inactive NGOs 9. Lack of appropriate processing, storage and packaging system 10. Absence of systemic approach in organic fruits growing. 11. Limited research and development centres 	<p>Threats</p> <ol style="list-style-type: none"> 1. Drought and climate change. 2. Low and late payment of damage compensation. 3. Fluctuations in fig price 4. Absence of a national logo and standards 5. Traditional harvesting and post-harvest practices. 6. Irrigation of orchards 7. Bulk selling. 8. Absence of integrated and systemic approach in planning for export. 9. Low coordination between Ministries of Agriculture, Industry and Commerce 10. Lack of developmental, extension and advisory services in fig marketing. 11. Inconsistent government policies

its exportation strategies. This structure has enabled Iran to obtain its real status in organic fig markets and allowed strong growth rates in organic production and exports. Therefore Iran, which is at a less advanced stage of development in its organic sector, when deciding what road should be followed to develop this sector and what basic requirements are needed to improve the probability of success, should pay greater attention to organic agriculture. In research and development, more attention should be given to R&D in the organic production sector and hardly pay any attention to the multi-purpose properties of much organic fruit production which could serve several

developmentally relevant purposes. Moreover, the case study shows that, with certain preconditions, potential exists for further development of Iran's domestic organic market, especially in dry farming agriculture and horticulture. Certification bodies or industry organizations could provide information on regulatory issues as part of their services to producers. Government could also take the lead in providing regulation information to those are interested.

A regional programme for the development of the organic industry needs to address all stakeholder groups and measures should focus on different levels, which are:

- Public awareness and education
- Product promotion
- Standards and certification,
- Marketing,
- Agricultural production and processing,
- Research, training and extension,
- Targeting organic agriculture to environmentally sensitive areas,
- Sector representation.

The development of a regional organic programme is a complex question and requires proper coordination to be successful. As a first step, therefore, a steering

committee consisting of representatives of stakeholder groups should be formed to coordinate the programme. This committee should have sections in each country and may be part of a regional organic association that may be formed.

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Table 2- Overview on strategies.

Strategies and objectives	Reference to SWOT analysis
<p>Strategy 1: Marketing strategies</p> <p><i>Objectives:</i></p> <ul style="list-style-type: none"> • Enhance marketing information • Identify export market • Establishment of extension and advisory services in fig marketing. 	<p>S: Ability to supply large quantities S: Low cost of production. S: Increasing demand for organic and healthy fruits. W: Lack of marketing information O: Geostrategic opportunities T: Lack of developmental, extension and advisory services in fig marketing. T: Absence of integrated and systemic approach in planning for export.</p>
<p>Strategy 2: Research and Educational strategies</p> <p><i>Objectives:</i></p> <ul style="list-style-type: none"> • Technical advice (extension) on production • Enhance consumer awareness • Fulfillment of Training courses for “key” farmers • Increasing awareness of the environmental, economic and other benefits of organic for farmers • Realization of a research on sustainable agriculture and organic farming 	<p>S: Increasing demand for organic and healthy fruits. W: Lack of awareness of benefits of organic agriculture W: Limited research and development centres T: Traditional harvesting and post-harvest practices.</p>
<p>Strategy 3: Structural strategies</p> <p><i>Objectives:</i></p> <ul style="list-style-type: none"> • Identifying and recognizing civil society organizations of the local organic community • Designing, implementing and enforcing national and regional Standards • Promoting certification infrastructure, including local certification bodies • Support the organic products • Introducing supportive government policies 	<p>W: Inactive NGOs W: Absence of systemic approach in organic fruits growing. W: limitation of access to credit O: Establishment of co-operation between farmers. O: forward contracts by government T: Absence of a national logo and standards T: Low coordination between ministry of agriculture, industry and commerce T: Lack of developmental, extension and advisory services in fig marketing. T: Inconsistent government policies</p>

Abbreviations: S = Strength, W = Weakness, O = Opportunity, T = Threat

References

- Chang, H.H. and W.C. Huang (2006). Application of a quantification SWOT analytical method. *Mathematical and Computer Modeling*, 43: 158–169
- Doymaz, I. (2005). Sun drying of figs: an experimental study. *Journal of Food Engineering*, 71: 403–407
- Dyson, R.D. (2004). Strategic development and SWOT analysis at the University of Warwick. *European Journal of Operational Research*, 152: 631–640
- FAO. (2001). World Markets for Organic Fruit and Vegetables - Opportunities for Developing Countries in the Production and Export of Organic Horticultural Products. Available from <<http://www.fao.org>>.
- FAO. (2003). *Statistical Database*. Available from <<http://www.fao.org>>.
- FAO. (2007). *Statistical Database*. Available from <<http://www.fao.org>>.
- Ferguson, J.J. (2004). World Markets for organic fruits and vegetables. Florida : university of florida.
- Guesmi, F., A. Ferchichi, K. Fares and L. Touil (2006). Identification and differentiation of *Ficus carica* L. cultivars using inter simple sequence repeat markers. *Afr. J. Biotechnol.*, 5(15): 1370-1374.
- Learned, E.P., C.R. Christensen, K.E. Andrews and W.D. Guth (1965). *Business Policy: Text and Cases*. Irwin: Homewood, IL.
- Mahdei, K.N. (2005). A “SWOT” analysis of medicinal plant production in Iran. *Acta Hort.*, (ISHS) 678:23-27 http://www.actahort.org/books/678/678_2.htm.
- Mahmoudi, H., H. Liaghati and Majid Zohari. (2007). “The Role of Organic Agriculture in Achieving the Millennium Development Goals: challenge and Prospects in Iran”. *Conference of Tropentag: Utilisation of diversity in land use systems: Sustainable and organic approaches to meet human needs*. October 9-11, 2007, Witzenhausen, Germany.
- Sadhu, M. K. (1990). Fig. In: T. K. Kose and S. K. Mitra (Eds.) *Fruits: Tropical and Subtropical*. Calcutta: Naya Prokash.
- Tous, J. and L. Ferguson (1996). Mediterranean fruits. In: J. Janick (Ed.) *Progress in New Crops*. Arlington: ASHS Press.
- USDA (2000). Foreign Agricultural Service, GAIN Report: Buenos Aires. Washington DC: USDA
- Vinson J.A. (1999). The function of food proprieties of figs. *Am. Assoc Cereal Chem. Inc.*, 44(2): 82-87.
- Willer, H. and M. Yussefi (2007). *The World of Organic Agriculture: Statistics and Future Prospects* International Federation of Organic Agriculture Movements (IFOAM).
- Yussefi, M. and H. Willer (2003). *The World of Organic Agriculture: Statistics and Future Prospects* International Federation of Organic Agriculture Movements (IFOAM).



